

73 latest hurricane of which there is definite record (7, 1913) occurred on January 9, 1914. This was preceded by a severe storm on December 14, 1913. Visitors who landed on Pukapuka on April 24, 1914, recorded that the high seas had washed away all but seven houses and flooded all the talo swamps. The wind blew down from the trees all the mature nuts and swept them into the sea. The people took refuge in the higher parts of the talo beds and subsisted on immature nuts and fish. The government schooner transported 52 Pukapukans to Rarotonga and settled them there until the Pukapukan food supply should reach normal again. A hurricane, which swept the Cook Islands in February 1935, was marked by exceptionally high seas in Pukapuka, but did no damage.

73 In former times, when no relief from outside was available, tidal waves and hurricanes must have produced famines on Pukapuka, or else reduced the incidence of famine by drowning the majority of the population. Previous to the tidal wave of 300 years ago, the population of the atoll was probably between 1,000 and 2,000. After the wave swept over the island, the population was reduced to 15 men and their families. Famines gave rise to many of the killings recorded in Pukapukan history, owing to quarrels over the control of the available food supply. It was no mere coincidence, therefore, that formerly the morning rising of the Pleiades in late May, heralding a season of good weather, was accompanied by dancing and feasting. The London Missionary Society church merely continues an old pattern when it holds special services in March to render thanks for safety during the preceding hurricane season.

NATIVE WEATHER LORE

82 The compass directions are named after winds (fig. 2) which are associated with the villages as follows:

621 Naga: Kaka, Naga, Malaga, Malaga toga, Tonga, Malitaga, Koo, and Pua.
Loto: Waka.
776 Yato: Tolaga, Tolaga mata, Waka, Fakaga, Yato, Laki.

The association of villages with wind names seems to be derived from the geographical location of the villages and the lands which they control. Naga, lying to the eastward, controls all the winds that blow on the east and south side of the atoll. Loto, between the other two villages, controls the only wind blowing from the sea onto the outer beach opposite the reserve of Uta. Yato, to the westward, controls the winds that blow over the reserve of Nua and across the reef joining Waka to Kotawa. The names of these winds are used in the chants of each village for symbolic reference; no village, in composing a new chant, would mention the name of a wind belonging to another village. Though the matter is now very vague, it is possible that

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formerly each village, through its power over specific gods, thought itself able to control the named winds by praying to the appropriate god. No special magical technique would be required for this purpose and the matter would be left to the routine duties of the priest when consulting the gods in the god house.

The gods exercise a general control over the winds from the four cardinal directions (p. 311). The story of Kaliwi (1) tells how a woman invokes each of the personified winds to blow her down from a tree top, but only the cold Tonga wind has strength to loosen her grip and send her tumbling to the ground.

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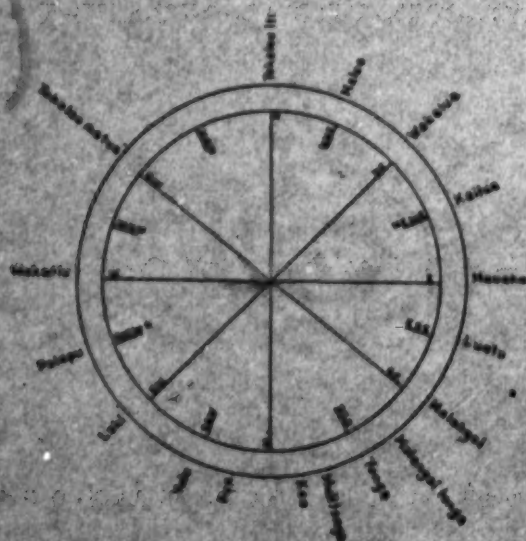


FIGURE 1.—Fukuoka winds and directional named directions.

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The word for side or direction is *kaho*. Hence a person says *kaho tohoku* (northern direction), *kaho tonga* (southern direction.) The term *punga malangi* refers to that portion of the beach which faces the direction of a wind blowing truly from *tohoku*, *tonga*, etc. To indicate precise directions when a wind is not blowing on the *punga*, the term *mao* is used. *E mao tohoku* is a wind from the north blowing a little to one side or the other of the true *tohoku* wind. This direction may be specified by adding the name of the next wind direction to the name of the *mao* wind; thus a wind blowing

192/ slightly to the west of tokelau is termed *mao tokelau wakatū*; one blowing slightly to the east of tokelau is *mao tokelau matua*. A wind that chops and changes to several points in the same day is called *matangi tilivole*; a wind that shifts to another direction to blow steadily for a week or so before changing back again is *matangi tautaka*; a wind that shifts and blows only for a day or so before changing again is *matangi tautakatoka*. As certain winds are valuable as two-way winds in sailing across the lagoon and back, the winds are classified: two-way winds (*matangi alalua*) from Wale to Motu Kotawa are *malangai* and *wukalia*, from Wale to Motu Ko they are *manake* and *palapu*; one-way winds (*matangi alatai*) from Motu Kotawa to Motu Ko are *tokelau* and *wukalia* and the wind for the reverse journey is *yulu*.

821/ Various beliefs are held about the relation of the weather to other phenomena. Black clouds (*kapuu uli*) low on the horizon, accompanied by thunder (*warinili*), are a sign that fresh fish have come inside the reef. A vigorous electrical storm was formerly considered to portend a time of violence. It was also believed to be the gods' warning of coming punishments for violation of tapu. When lightning (*ula*) strikes the ground or a tree or when a meteor (*meta mo'i kava*) appears to strike the island, this is a sign that a woman has conceived a child in incest and has had an abortion or miscarriage in order to avoid a shameful pregnancy.

[577] A rainbow (*manua*) breaking through black clouds and a stormy sky is a sign that the bad weather has been broken by the bars of the rainbow and will soon blow away. A rainbow cutting through the clouds in a dull sky is a sign that turtles have come to the outer beaches, or that a shoal of fish is outside the reef. If the bonito fleet is fishing and the people see this rainbow, they comment that the fishing will be successful. A rainbow seen in the early morning or late afternoon is a sign that abacore fishing is good. [613] For chiefly succession in the Muliwutu lineage the successful aspirant is the one who can make a rainbow appear in the sky when he strikes with his right hand on the sacred stone of the worshiping enclosure (*awanga ya*).

If the wind blows hard from the southeast, then moderates and swings round to the northeast, this is a sign that flying fish are abundant. When red streaks appear to shoot up to the middle of the sky at dawn, this is a sign of heavy rain and hot weather to come. A halo or house round the sun (*te wala no te la*) signifies heavy rain on the following day.

821/ If Yina, the woman in the moon (*masina*), is clearly outlined and easily seen, this means fair weather; if she is dark and obscure, a heavy sea will make fishing difficult. The crescent of the new moon turned toward the north means fair weather throughout the moon; the crescent turned to the south is a sign of bad weather; the moon lying on its back presages hot weather. An eclipse of the moon or sun (*maina kaina, la kaina*) is caused

821 by the events narrated in the story of Lingutaimoa and her pet *manini* fish (1).

SEASONS

821 The native Pukapukan year was divided into seasons (*vaia*). The sign for the new year was the morning rising of the Pleiades, about the middle of May. This ushered in a period of six moons of pleasuring, *ono maina ututu* (*ututu* is a jumping game, and presumably the word is a symbol of good feelings engendered by sporting contests). Some informants dated this period from the rising of the Pleiades, others from the first new moon after the rising. Hence it comes between the May-June and October-November moons. The cool trade winds blow steadily from the southeast, deep-sea fish are plentiful, and the sea outside the reef in the lee of the atoll is always calm enough to render it possible to catch these fish. This season, though marked at times by a shortage of *talo*, is usually well provided with fish and nuts. It is the time for competitive sports, for deep-sea voyages, and for well-being. The period is introduced by feasting and dancing.

The six pleasure months are followed by six tapu moons (*ono maina ya*) from November to April. It is a period of heavy and changeable winds, possible hurricanes, excessive heat, and sultry weather. Deep-sea fish are not plentiful, and heavy seas sometimes make fishing arduous. Food comes from reef fishing and beach fishing for smaller fish. The supply of *talo* is plentiful if there has been no destruction of tubers during the preceding season. There was formerly little dancing, feasting, or chanting during this period, except at deaths. Compared with the moons of pleasure, these moons mark a time of stagnation of group activities, when only routine matters are kept in hand.

Another native classification gives three seasons, cutting across the dual division. The rainy season (*te vaia yua*), lasting from November to March, starts when the wind swings round from the south to the northwest and wild ducks are sighted flying southward. At this time the people of Yato village repair their houses and reroof them, because this village bears the brunt of the winds from the north and west. It is a season for good growth of trees, nuts, and *talo*; fishing is bad, but turtles come onto the outer beaches at the beginning of the period. The marine worm (*palolo*) is not known in Pukapuka so there is no *palolo* season to usher in this period. The season for fair weather (*te vaia loloi*) lasts from March to June when fishing is good and there is still much rain and plenty of food. The season of scarcity (*te vaia te te euge*) lasts from July to October. There is little rain, the *talo* turns yellow and does not produce tubers in any abundance. Growth of coconuts is marked by a midwinter pause; though not plentiful, they are generally sufficient for the needs of the population. Deep-sea fishing is good but water

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on Mota Ko was so large that Ngake village made a present of 2,000 talo tubers to each canoe from the other two villages that went across to Ko to get the food. This was an act of generosity, marking no set occasion.

2. *Lauya*, a village feast held today on the completion of some village activity. It formerly occurred on the rising of the Pleiades to celebrate the beginning of the season of plenty. It was timed to coincide with the lifting of the prohibition (*lau*) on village food reserves. The communal gathering of food for such a feast is also called *lauya*, as *lauya lau* (crabs), *lauya lau* (birds). A *lauya* after a tapu period ensures that after the period of privation the special foods will be shared among all the villagers. If talo, nuts, and fish are plentiful when the tapu is raised, the *lauya* feasting may last for one or two moons. After a preliminary survey of the food resources, the village men decide how many divisions there are to be in each moon and how many moons the food is likely to last. Starting with the first night of the new moon, divisions may be made every 10 days, the last one to coincide with a new moon; either in the first or second month after the commencement of the feasting. This emphasis on the moon as a governing factor in the *lauya* feast links with the custom of replanting talo and other food plants on the days of the new moon to ensure good growth.

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3. *Ngelunga*, the feast which is held for a village guard at the end of its service in the reserve land or to pay the workers thatching a new house (pp. 36, 76).

4. *Wahemalinga*, the feast provided by the owner of a new canoe or of a new sleep house (not cook house) for the food contributors, the workers, and the principal people of the island. It is a bigger and more elaborate food division than the *ngelunga*, though not elaborate enough to be classed as a *monolinga*.

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5. *Kavikav*, a feast celebrating the end of a fishing contest (*malama*) or other inter-village contest. The food is provided by the whole island. Formerly the old man's group and the sub-chiefs decided on the contribution to be levied from each household. Today this levy is fixed by an informal meeting of village representatives.

Other feasts discussed in their special context are:

Welo, *tuamoyaga*, and *pueli*, food divisions for the birth of children; *walikina*, food division on the occasion of an important marriage; *paia wale* and *lulukunga*, feasts at death ceremonies; *laukaus*, food divisions held at the command of the chief to mark his induction, the birth of an heir, or a death.

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Iau kai o te wae is a food division among members of the maternal lineage held on no set occasion, but whenever there is abundant growth of talo in the gardens controlled by the lineage.

Special names are given to the feasts of the paternal lineages:

Lauwetongi (animal intestines), feasts of the two Ngake paternal lineages; *walio alai* (flying fish on the reef), feasts of the Yato lineages; *lingolinge* (land shells), feasts of the Loto lineages. These three names refer to the fishing set-up of the three villages. Ngake and Yato are the rich fishing villages with plentiful supplies of fish for their feasts; Loto is poor in fish supplies and the reference to land shells is indicative of the small amount of fresh food that this village could supply its guests. For these feasts, the reserve lands of the villages are opened by special arrangement, and special delicacies are expected—birds from Kotawa, turtle from Ko, and extra supplies of nuts from Ua. A paternal lineage gave a feast of this type at the conclusion of some special work—the building or rethatching of its god house, clearing the ground around its religious structure, clearing up its cemetery, building a new *pianga* (religious avenue). When other paternal lineages learned that one group proposed to hold a feast, they all joined in sending courtesy gifts of food.

The mechanism is: a Ngake lineage is giving a feast; each household of the Ngake group is levied so much prepared talo; each household makes this amount of talo food and extra talo puddings for friendly households in the other villages which have int-

OTHER PLANT FOODS

222 No origin myth is remembered for pandanus. Though it is not cultivated, pandanus grows abundantly. The keys (*pena*) may be eaten raw
262 when ripe, with or without complement (*kimaki*). They may be sliced and
252 baked (*wale tao*) and eaten with *ipipi*. Grated raw and added to talo
puddings (*ole wale* and *likoliko wale*) they give a sweet flavor. The juice
of baked keys (*makano*) is used in the same way. The fruit is enjoyed by
adults and children and provides an important flavoring and sweetening
agent in the native diet. Children crack open the keys and chew the inner
kernel. The woman in the moon, Yina, is said to be seen kneeling before a
stone cracking open pandanus keys.

The banana was among the items fished up by Maui. Of the several
245 varieties of banana (*wuti*) growing on the island today, *wuti pukapuka* is
said to be old and indigenous. The trunk of the tree is called *pu wuti*.
262 *Lito* is a small banana leaf; *lawuti*, a large leaf, used extensively in cooking
as a food wrapper; *laumetu*, the old, dried, and withered leaf; *hau*, the leaf
midrib; *hili*, the fruit peel; *kiko*, the flesh. Bananas are not abundant on
the atoll and are not important in the daily diet. They grow in the talo
beds and close to the houses. When available, they are much in favor as
431 gifts. A household may get a small bunch of fruit from its trees once in
five or six months. Bananas are ripened by hanging or by burying. A
251 bunch (*ta*) of green fruit is cut and buried in a hole in the ground 2 feet
deep and lined with coconut husks. The bananas are placed on a bed of
252 husks and covered with coconut mats (*polapola*), then more husks, and
finally with earth. After three nights the bananas are ripe and are eaten
raw or cooked on hot stones. If a meal is made of bananas the correct
complement is *ipipi*.

249 Some sugar cane (*ta*) is grown today on the talo bed embankments. It is
owned by the villages and at infrequent intervals is divided among all village
621 members. The cane is peeled with the teeth and chewed by children and
adults with great delight. The cane is *pona*; the rings around the cane, *va*.
245 The few papaya trees (*minite*) and lime trees (*tipole*) are grown on Motu
262 Kotawa and the fruits divided among all members of Yato village. One
breadfruit tree on the atoll was planted by a man from Aitutaki. Its yield
of fruit is negligible.

PLANT MEAT

262 There were two staple flesh foods in former times, sea foods (fish, turtle,
shellfish, crabs) and sea birds. (See pp. 27-31.)

No tapu against the eating of raw fish exists in Pukapuka, though
visitors from Aitutaki have unsuccessfully tried to introduce the idea.
Actually fish is not often eaten raw. A fishing crew occasionally eats some

[224] to this god to send fish close to the surface so that they might be more easily noosed.

776 Te Maungata, another god of Yamaunga, seems to have had no special powers other than those relating to the general protection of his worshippers.

613 Te Mangamanga, god of Yalongo lineage of Yato, added to his general
313 duties special duties which included the protection of the reserve of Niua, its
241 nuts, talo and timber, and also the control of all the *ngangie* wood growing anywhere on the atoll. If anyone wished timber from Niua for a canoe, or *ngangie* for implements, he went first to the priest of Te Mangamanga, who consulted the god; if the god was willing, the priest cut down the tree or the piece of *ngangie* and gave it to the person who had requested it. For an unauthorized person to cut timber, or to steal from the reserve, constituted a theft from Te Mangamanga, and the god was quick to punish with sickness. Whales that drifted ashore also came within the special province of Te Mangamanga; it was his priest who directed the cutting up of the whale and its division among the people. No child might eat whale flesh on pain of being made sick by this god. Te Mangamanga was sometimes called *atua pouli* (god of darkness) because he was supposed to inflict his punishment under cover of darkness.

[262] Te Tawitonga, another god of Yalongo, hissed and frightened thieves stealing talo from the beds of Niua, or from those controlled by his worshippers.

DEPARTMENTAL GODS

776 Matalofau and Matalomea resided in the mud of the talo beds. Neither religious structure nor priest was associated with them. Every time talo was taken from the beds these two gods were remembered with a gift of three or four tubers left for them in the ground.

776 Kanitika was originally a god who controlled the sun. Because he did
821 not order its heat to the liking of either gods or people of Pukapuka, the four gods Te Awuwau, Te Atua Vaelua, Ngaliyeyen and Te Alangaoa removed Kanitika from the sun with a pair of coconut fire tongs and threw him to the earth where he landed in a flash of lightning. Some informants thought Kanitika went back to the sun in a chastened spirit, since which time the days in Pukapuka have been much cooler; others believe he changed himself into an earthly god, renaming himself Te Atua Pule.

[421] Te Alangaoa, besides being a god of Matanga lineage with ordinary duties, joined with Te Atua Vaelua, Ngaliyeyen and Te Awuwau to make a quartet of free-lance gods who at times had the attributes of culture heroes, at other times those of departmental gods controlling winds and seas. These four were greatly given to bickering and contesting among themselves. They were specifically concerned with the control of the winds. Te Alangaoa was god

776 of the south wind; Te Atua Vaelua was god of the north wind; Te Awuawu,
 821 god of the east wind; and Ngaliyeyeu, god of the west wind. The four gods
 were leaders of hosts of attendant gods who fought each other from their
 respective parts of the sky by throwing spears at each other. The spears
 were thought of as shafts of air and the speed with which they traveled
 caused the winds to blow. Thus when the winds grew strong the people said,
 "The spirits of the gods are fighting hard." Then the people went to the
 priests of Te Alongaoa and Te Atua Vaelua and asked them to intercede
 with the gods to call off the battle for the time being. If the winds of Te
 Awuawu or Ngaliyeyeu were rebellious, the people prayed to these gods
 directly.

Because of their control of the winds, these gods were directly interested
 also in the control of the sea, especially the natural perils of the sea. They
 were consulted directly, or through priests, before fishing or voyaging expe-
 ditions that they might favor the people with calm seas and gentle winds. In
 this control, they were joined by Talitonganuku, who was more interested
 in waterspouts and whirlwinds. Fighting between the gods was responsible
 for the abandoning of deep-sea voyaging. (See p. 408.)

776 Te Alongaoa and Te Atua Vaelua were also interested in fish, particularly
 242 in fish with pointed mouths like garfish, sword fish, needle fish. The priests
 613 of these two gods were not supposed to eat any of these fish; this is the only
 example of a food tapu associated with a god. The people of the lineage
 might eat these fish.

776 Te Awuawu and Ngaliyeyeu were sometimes called *atua lata tangaloa*
 (tame gods). They were considered more reliable than some of the lineage
 gods, and were consulted by all the people of the island when quick action
 or response was required. They could be consulted anywhere and at any
 time, on land or sea, and did not require the mediation of a priest. They
 were appealed to in sickness, for the curing of which their reputation was
 high. Though their home was in the Underworld, they were ready to come
 forth with the utmost promptness to help intercessors.

776 It is possible that formerly there were decorations and attributes asso-
 613 ciated with these gods that are now forgotten. Thus in an old chant, "La-
 ngona e te lulu i Matano", there is a reference to the carrying pole (*amonga*)
 of Ngaliyeyeu. This is believed by informants to refer to the fact that
 Ngaliyeyeu used a carrying pole to transport, perhaps symbolically, his power
 from one place to the next. He gave part of his power or protection, which
 by transfer was attributed to his carrying pole, to the sub-lineage Walanga-
 kula, another part to the Yato lineage Yayi. Hence these lineages sometimes
 refer to themselves in chants as *te amonga o Ngaliyeyeu*; they refer also to
 [361] their worship of the carrying pole on the religious structure of the god.
 With Ngaliyeyeu are associated decorations of *pua lankie* for his male wor-

776 powers, though not deistic functions. Lu was called upon by Te Atua Vaelua to raise up the sky. He came from the land of Aolako, accompanied by his friend, Pingao. Te Atua Pale is thought by some to be the same as Kanitika, but by others to be more of a man-eating ogre. The only mention of Te Alitika is in the story of the three-cornered contest with Te Awuwu and Ngaliyeyen (1). Nothing more is known of him.

776 821 Wua and Velo were gods who "made" star signs, showing the seasons for fishing. Two stars, either α and β Centauri, or two others of the same declension, are called Na-lua-mata-o-Wua-ma-Velo (The-two-stars-of-Wua-and-Velo).

Totoloa was a god of the eastern seas; Tipeva and Kanapu were gods of the western seas. They lived in houses under the sea and had as their mistresses (*ipo*) the large deep-sea fish. These fish brought all the pearl-shell fishhooks they could bite from the lines of Pukapukan fishermen to the gods who stuck the hooks in the rafters of their houses.

The phrase, *te pane o Tane* occurs in a chant; informants believe this refers to Tane, a god of the legendary land of Yayake. The word *pane* is so archaic as to be no longer translatable, but informants thought it might refer to some mysterious power possessed by this god which enabled him to send fish around the canoe of the fisherman. Nothing more is known of Tane, nor is anything known of other major gods of the Polynesian pantheon such as Rongo or Tu. The name Tangaloa occurs in two chants, "Wakaanga kokoti te waulua" and "Wakaoli io koe". In the first, Tangaloa is referred to as an *ainu wongota* (fishing spirit); in the second, mention is made of the southern place (*te veyi tonga*) of Tangaloa. Informants could not clarify these references and had no memory of a god corresponding to Tangaroa.

ATTENDANT GODS

776 775 A final class of spiritual beings with godlike powers were called *acua* or *tikitiki*. They were minor gods or servants of the major gods. When a fisherman's request to the major god of his lineage was favorably received, the god sent some of his attendants to help the fisherman. The attendants came from their legendary meeting place called Lauawa, rounded up the fish, and drove them toward the fishing canoe. Informants compared these minor spirits to angels assisting the major Christian gods. Some of these minor spirits were recruited from the ranks of ancestral spirits or spirits of the recently dead. Others were small gods who dispersed from Tonga when Maui hauled it up. In this latter group are placed the names of minor gods, who sometimes function as gods in their own right. A good example is Te Maungatu, who is sometimes given as an attendant god, at other times as subordinate only to Te Laupapa, and again as a god of Ngake and Yato.

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be names of these moons, but it is a matter impossible to decide today. The names of the nights of the moon are:

1. *Koa makatia e te la*: (the moon is) thrown out by the sun.
2. *Po wakaia*: making shadows of the night.
3. *Po pua*: the night is spotted.
4. *Po lua*: the second night.
5. *Po tolu*: the third night.
6. *Po wa*: the fourth night.
7. *Po lima*: the fifth night.
8. *Koa tata te maina*: the moon is erect, or stands high.
9. *Koa itu wema*: the land is divided into two (by the moon?).
10. *Koa tu mui loa ki luga te maina*: the moon is on high.
11. *Koa ngale te maina*: the moon moves (higher).
12. *Koa wolo te maina*: the moon is big.
13. *Koa wolo loa te maina*: the moon is very big.
14. *Koa momona te maina*: the moon is fat.
15. *Koa maliko te maina*: the moon shines or glimmers.
16. *Koa wakaia te maina*: the moon is overhead.
17. *Koa yengie te maina*: ? (refers to the night when the crabs mate).
18. *Te lama yengi*: the yellow light, or the yellow torch.
19. *Te uluki han pouli*: the first-born of the group of dark nights.
20. *Wakatu*: to make the first dark night.
21. *Wakatu*: to make the second dark night.
22. *Wakatu*: to make the third dark night.
23. *Lama wakatu*: the (time for) torch fishing is equal (to the length of moonlight).
24. *Koa loa te po*: the night is long.
25. *Koa ngale ki agake*: (the moon) moves to the east.
26. *Koa wai loa ki agake*: (the moon) tilts well to the east.
27. *Koa kauliki loa*: (the moon) is very small.
28. *Koa wakatu waka ma te ulu o te ata mata*: (the moon) rises at the same time as the darkness before dawn.
29. *Koa wakatu waka ma te ata mata*: (the moon) rises just at the first streaks of gray dawn.
30. *Koa waka ma te ata kama*: (the moon) rises just at gray dawn.
31. *Koa wakatu waka ma te la*: (the moon) rises with the sun.

ASTRONOMY

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Pukapukan study of the heavens seems to have been governed by the use of the stars and planets as guides for seasonal and fishing changes and the use of the stars as guides for long sea voyages. With the decadence of sea voyaging, much of the old-time lore fell into disuse and was lost. Puyaka, the great expert in star lore at the time of Tuiva committed suicide and took with him to his grave much esoteric star lore. Informants were sure that Pukapukan knowledge of the stars is today but a remnant of former knowledge. The younger men now know only a few star names, some of which they can not even identify. The legend of Maui (1) accounts for the way in which Maui's stars were placed in the sky. Maui was later asked by the gods to count all the stars, a feat which he accomplished. Beyond this, informants could say nothing about the origin of stars.

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The named planets are:

PLANET	NATIVE NAME	REMARKS
Mercury	Forgotten	Called <i>te mata pili loa ki te la</i> (the star very close to the sun).
Mars	<i>Mata-kula</i> (Red-star) a name given to <i>Aldebaran</i> or other conspicuous star	That Mars changes its right ascension and declination is not known.
Venus	<i>Takupu-tea</i> (White-booby-bird)	Known to be the same star when observed in morning or evening; its morning appearance confused by some with morning rising of Jupiter. No native belief as to why Venus rises only part way to observer's meridian.
Saturn	<i>Mata-tea</i> (White-star)	
Jupiter	<i>Tapao</i> <i>Tulalupo</i> <i>Tokiva</i>	When visible to east in morning. When visible to west in evening. When visible overhead.
Sirius		Confused with Jupiter, whose three names are applied to Sirius when latter is in position to warrant their use.
Sun	<i>La</i>	Rationalizations for eclipses of sun and moon given in story of <i>Lingutaimoa</i> (1).
Moon	<i>Mama</i>	Face of moon pictures the woman <i>Yina</i> pounding pandanus key to extract its nut.

The ecliptic of the sun is termed *Te Ala-o-te-la* (The Path-of-the-sun). The half of the ecliptic to the north (*Te Lua-poto*, The Short-hole) is the season of fine weather and pleasure-making. The half of the sun's ecliptic to the south (*Te Lua-loa*, The Long-hole) is the time of bad weather and *tapu* activities. Informants say that *Te Ala-o-te-la* goes into the *lua poto* or the *lua loa*. This may mean that the sun in its passage through the sky passes through a hole (*lua*) or cave in the sky. *Poto* and *loa* refer to the short days when the sun is to the north, and the long days when it is to the south.

The named nebulae and the star clusters are:

NEBULA OR STAR (CLUSTER)	NATIVE NAME	REMARKS
Black nebula near <i>Cru</i> "The Coal Sack"	<i>Te Paniwi-o-Tacua</i>	<i>Tacua</i> named this nebula for its imagined resemblance to the <i>paniwi</i> fish.
Triangular black nebula near <i>Scorpio</i> (45° south declination, 18 hours right ascension)	<i>Te Tao-o-Mani</i> (Spear-of-Mani)	The spear that <i>Mani</i> thrust into his shark and hurled into the sky.
Milky Way	<i>Te Mangu</i> (Shark)	The shark hurled by <i>Mani</i> . Pukapukans not aware they are observing different halves of the Milky Way during winter solstice (when shark's head is to south) and during summer solstice (when head is to north).

82/ Greater Magellanic Cloud ^a	Mau-tonga	Said to be a woman because it comes from the cold south (tonga).
Lesser Magellanic Cloud ^a	Mau-tokelau	Said to be a man because it comes from the warm north (tokelau).
Præsepe cluster (18-19° north declination, 25 ^h 30 ^m right ascension)	Pangolengole-a-Kiliwelo	Also generalized name for star cluster or visible nebula such as Great Nebula of Andromeda as opposed to star clusters with named individual stars.

As distinguished from a star (*mata*), a shooting star or meteor is *matole* (running-star); a comet, *mata-wai-koue* (star-with-a-tail). The word *houvinga* means a star constellation in general, but more particularly, a group of stars which have the same declination.

Named stars are:

Mata-kula (Aldebaran), often confused with Mara.

Tolu (three) or Taki-piki-tolu (α , β , and γ Aquilae). Morning rising of α Aquilae (Altair) is sign of commencement of rock grouper season: talao, wapuku, ulupunga, and tiwitiwi fish plentiful.

Melenole (Antares). Morning rising sign for rock grouper season.

Te Wale-o-Tutakalo, House-of-Tutakalo, (α , β , γ and θ Aurigae, β Tauri).

Na Taki-toi-a-Mataliki or Na Taki-toi-a-Mataliki, Three-of-Mataliki (α , β , and γ Cassiopeiæ). Rising slightly before the Pleiades (Mataliki), these stars and Mataliki are signs of approach of flying-fish season.

Na Mata-o-te-tokelau, Stars-of-the-pair, (stars of same declination: α , β Centauri, γ , θ , ι , ϵ Argonis, Canopus, Achenar, ϵ Doradi, α and β Orac, α and β Crucis). Morning rising of α and β Centauri is believed to herald period of good lagoon fishing. These two stars often called Na Lua-mata-o-Wua-ma-Velo, and are used as star course to Niue. Informants' belief that any star of same declination as α and β Centauri is included in Stars-of-the-pair is interesting in relation to this star course: The more stars of the same declination the navigator steered by, the easier it was to keep a straight course.

Te Yiku-o-te-kiole, Tail-of-the-Rat (Coma Berenices). Pau believed that this name refers rather to Ursa Major, of which α , β , γ , and δ form the body of the rat, and stars ϵ , η , and ζ form the tail. Both identifications appear on chart.

Te Wale-o-Awitu, House-of-Awitu (Corvus Borealis).

Te Maun, Bird (Corvus). Morning rising is sign of rock grouper fishing season.

Na Mata-o-te-paniwi, Stars-of-the-"Coal-Sack" (Crux). Morning rising is sign for rock grouper. The name Tautolu for Crux is said to be a modern importation. Pau believes that Na Mata-o-te-paniwi is also modern. It is possible that Crux was unnamed by Pukapukans of former days.

Te Tolca, Duck (four 4th magnitude stars in Delphinus). First rain after their rising, a sign of the approach of the rainy season, is referred to as *te tolca yua* (duck water).

^a At times only one cloud is visible, because Mau-tokelau moves over to Mau-tonga, where the woman's sail, unseasonal waters and then submerges her in usual intercourse, so that the two clouds become one, with Mau-tokelau superimposed on Mau-tonga. Informants insist that sometimes there are two clouds, sometimes one; they do not find at all reasonable the suggestion that perhaps one of the clouds has set or has not yet risen, or that moonlight has obscured the latter cloud while the greater cloud is still visible.

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- Na Pongaponga-tyu-o-te-kiole, Nostrils-of-the-rat (visible binary, 4 + Lyrae and 5 Lyrae). Some confusion over identification of the name. Likely that almost any visible binary may be correctly called by this name, in same way that Jupiter and Sirius may both be correctly called Tago.
- Te Tolunga-Mani, Three-Mani-Brothers (1, 2, and 3 Orionis). Veti alone included Orion's sword as well as his belt in this constellation. Used as star course from Pukapuka to Oloenga and return.
- Te Wao-a-Mani, Fishline-of-Mani (2, 3, 4, and 5 Ophiuchi and 6 Serpentis). Most informants agreed on including these stars as the main ones in the Fishline, in reality a group of stars strung out north along the Milky Way from Scorpio. An unimportant constellation, figuring neither as star-course guide nor as fishing sign.
- Taki-piki-tohi (group of stars in Pisces Australis). Veti and Pau maintain this identification, and refer Tohi alone to 2, 3, and 4 Aquilae. Possibly this distinction is old.
- Mataliki (Pleiades). Morning rising marks change of wind to southeast, heralds flying fish, reef fish, and bigger deep-sea fish (then full of roe) seasons. Hence the saying, "Tea te lau ika o Mataliki ka yau" (Here are all the fish of Mataliki coming). Formerly morning rising introduced the six-moon period of pleasuring. Mataliki directly overhead in the sky is a sign of turtles coming to lay eggs on the outer beaches.
- Te Kau-o-Mani, Fishhook-of-Mani (cluster of 4th, 5th, and 6th magnitude stars in Sagittarius). Often confused with the tail of Scorpio, though it lies southeast from the southernmost stars in the tail.
- Lau-tana-iki, Two-beautiful-children or Lau-pulotu-koki, Two-beauties-close-together (2 and 3 Scorpius). Their modern name, Pipili-ma, is said to be Tahitian.
- Tamamakomako (7, 8, and 9 Scorpius). Some informants do not recognize this constellation. Identification is doubtful, as it includes Antares, definitely named Melemele.
- Te Ala-lavanga-o-te-ika, Star-sign-of-fish (Ursa Major). Descriptive name only because this constellation is known by all as sign for reef fish. Pau's identification given above.
- Te Mune-o-ngani. Group of small stars known to some, could not be identified.

STAR COURSES

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The value of Pukapukan star courses from the viewpoint of modern navigation has been worked out by Robert Dean Frisbie, whose notes follow. The accuracy of the star courses to the west and from Samoa to Pukapuka is noteworthy. Informants knew of no star courses which would help a navigator sailing eastward from Pukapuka, an indication perhaps of the pre-dominant contact of Pukapuka with western islands.

The course from Pukapuka to Niue was equal to the bearing of α and β Centauri (Na Mata-o-te-tokalanu) when low in the sky to west of south. Informants emphasized that the stars must be low in the sky; evidently the old navigators were aware of the Centauri's rapid change of bearing when at a higher altitude (no such emphasis was laid on the Antares, or the ϵ Orionis, star courses). Informants were not aware of the stars being in their lower transit when observed low in the sky; but a navigator sailing so far south as Niue, lat. 19° $10'$ S., would undoubtedly observe this.

The true course from Pukapuka to Niue, calculated by Mercator sailing, is 209° . The course that would be steered by a canoe headed toward ϵ Centauri, at 5° altitude, would be equal to that star's bearing, which is, in the latitude of Pukapuka, 209° . This is computed by the formula: $1/2 Z = \sqrt{\cos \delta \cdot \cos (\delta - p)}$, sec. L, sec. h. (In this $\delta = 1/2 \delta + L - p$; Z is bearing; L, latitude; h, altitude; p, polar distance.)

539 swallow Yina's coconut husk menstrual pad which had fallen
773 into the water, but the pad lodged in the throat and gills of this fish and has stayed there to this day. Thus when a taotaoma fish is caught one finds in its throat a sort of fungoid growth called te pulu o Yina (husk fibers of Yina), a remembrance of the hunger of the ancestor of the taotaoma fish. All the other fish of the sea, the manini, the tawa, the ngatau, the tiwitiwi and many others were striped in different ways by the scratching fingers of Yina. Yina tore in two the tail of the whale and this has remained splayed to this day.

At this time also all fish had small stones in their heads instead of brains. From each fish Yina removed the stone and inserted in its place some grey clam flesh. This gave the fish more understanding, making it easier for them to understand Pukapukan fishing calls and thus more ready to come to the fisherman when he needed them for food.

The second story of the goddess simply states that she made a visit to the moon though how she got there or what the purpose of her visit, no one knows. But today if one looks at the moon, one may see in it a picture of Yina. She is kneeling before a hearth stone on which she holds a Pandanus fruit key. In her uplifted hand she holds a striking stone with which she is about to crush the key and extract therefrom its kernel. Now when adults and children crack open a Pandanus key they think of Yina mirrored in the moon showing them how to do it.

The third story tells how Yina went for a ride on the back of a turtle. She took for her lunch some coconuts. The turtle took her to visit many lands. Yina became hungry and cast about for a way to open a nut. She decided to hammer it open on the head of the turtle, though the turtle had previously warned her against this. When the nut was hammered on its head, the turtle became angry. It sounded and said that in the future, whenever it saw human beings, it would always sound and in this way avoid them. Yina jumped off its back and swam back to Pukapuka. The turtle before this had always been a surface living animal, but for the cruelty of Yina it would remain so today. Now that the turtle has learned to sound it is much more difficult to catch and dangerous also, because it may drag down and drown a man whom it has caught with its flippers before sounding.

Lingutaimoa and her pet fish

The story of Lingutaimoa tells indirectly how eclipses of the sun and moon occur.

Lingutaimoa was a woman of Loto. When the manini tauila (seasonal manini fish) came to Pukapuka, she happened to catch

539 she embarked on it and was quickly taken to the horizon. When
 773 she got there, she clung to the horizon as the wave went past,
 [821] and easily clambered up to the sky. In the sky she went round
 inquiring as to her manini. People said the Fair-people must
 have killed it. Coming to their land in the sky she found traces
 of blood which she knew to be manini blood. It was this blood
 that got smeared over the sun and the moon when the manini
 was killed, and which causes to this day eclipses of the sun
 and of the moon. Then she came to the Fair-people and found
 bones of her manini. She met the chief's assistant of the Fair-
 people, and he admitted that he had received the cheek bone of
 the manini. So she killed him. Then she went on and found
 the chief of the Fair-people. He said he had been given the
 gills and stomach of the fish as was his chiefly share. So she
 killed him too. And she killed all the people who had eaten
 of her fish. This finished, her revenge was complete. She
 went to the horizon and called up another wave to take her
 back to Pukapuka.

The following chant refers to this story of Lingutaimoa:

Na ai te pu e tangi nei? (4)	Whose the trumpet sounding?
na te tukipo, te tuki yami,	Of the warning cry, the cry for coconut food,
Yuyu mata tilola e Lingutaimoa,	Wet eye straight gazing
koa lili vaka, koa ita vaka i	of Lingutaimoa, full of
tana manini	anger(he), anger for her <u>manini</u>
Koia yele to kei te tai, to	Noosed, dropped to the sea,
kele, kele, kele,	dropped struggling
Tiale ti, tiale ta, tiale	Flower picked, flower
kaina e te Tea	killed, flower eaten by the Tea people.

[173] The reference to the Fair-people-of-the-sky is the only
 one in Pukapukan traditions or stories to such people. In-
 formants could give no details about them other than what is
 known from this story. It is likely, however, that the refer-
 ence represents a memory in tradition of the fair skinned,
 chestnut-haired people one of the racial strains that is reported
 in the population of other islands of Polynesia.

4. The reference is to the Yayake warning cry in the
 traditional account of the killing of the Yayake people
 on Motu Ko. [1:] Beaglehole [and Beaglehole, pp. 380,
 category 116--Analyst].